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RTO MEETING PROCEEDINGS 96

Cost Structure and Life Cycle Cost (LCC) for Military Systems

(Structures de coûts et coûts globaux de possession (LCC) pour systèmes militaires)

Papers presented at the RTO Studies, Analysis and Simulation Panel (SAS) Symposium held in Paris, France, 24-25 October 2001.

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- HFM Human Factors and Medicine Panel
- IST Information Systems Technology Panel
- NMSG NATO Modelling and Simulation Group
- SAS Studies, Analysis and Simulation Panel
- SCI Systems Concepts and Integration Panel
- SET Sensors and Electronics Technology Panel

These bodies are made up of national representatives as well as generally recognised 'world class' scientists. They also provide a communication link to military users and other NATO bodies. RTO's scientific and technological work is carried out by Technical Teams, created for specific activities and with a specific duration. Such Technical Teams can organise workshops, symposia, field trials, lecture series and training courses. An important function of these Technical Teams is to ensure the continuity of the expert networks.

RTO builds upon earlier cooperation in defence research and technology as set-up under the Advisory Group for Aerospace Research and Development (AGARD) and the Defence Research Group (DRG). AGARD and the DRG share common roots in that they were both established at the initiative of Dr Theodore von Kármán, a leading aerospace scientist, who early on recognised the importance of scientific support for the Allied Armed Forces. RTO is capitalising on these common roots in order to provide the Alliance and the NATO nations with a strong scientific and technological basis that will guarantee a solid base for the future.

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Cost Structure and Life Cycle Cost (LCC) for Military Systems

(RTO MP-096 / SAS-036)

Executive Summary

Costs have long since become a major issue in military systems analysis. Attention is not limited to the acquisition costs alone, but encompasses all costs involved in the use and disposal of systems. Concepts such as Life Cycle Cost (LCC), Whole Life Cost (WLC), Cost of Ownership (COO) or Total Ownership Cost (TOC) are more and more frequent in any document dealing with system analysis. Most nations have developed and use their own definitions, methods and tools, which may cause problems when it comes to working together at multinational level. This is why a study has been undertaken under the auspices of NATO to harmonise the most important aspects of LCC. The study carried out by the technical team SAS-028 covered three concurrent areas: the cost breakdown structure that defines and organises all cost elements to be considered, the boundaries of those cost elements defined by LCC, TOC, COO and WLC and the uses of those concepts (economic or financial analysis, optimisation, etc.) by decision makers.

The symposium focused on these and other objectives for the introduction of Life Cycle Management (LCM) and the need for an action plan for the near, medium and long term to be carried out under the guidance of a higher NATO authority. The need for accurate objective based Cost estimation was clearly identified as a requirement to meet the future estimation and forecasting challenges, and the utilisation of both commercial and non-commercial practices and the consideration of total life costing was considered essential if the life cycle process was to be shortened. Clear differences were identified between these two (commercial, defence) paradigms and various successful costing models were presented. These models, whether developed independently or jointly, may differ in structure but clearly show similarities in some of the identified cost drivers. Further, they clearly demonstrate that there is a great deal of expertise and experience being gained throughout the NATO community, and their presentation at a single forum give nations the opportunity to present their own practices and experiences, thus fostering exchange of information among the NATO and partner communities, and to strengthen LCC studies in multinational projects.

Structures de coûts et coûts globaux de possession (LCC) pour systèmes militaires

(RTO MP-096 / SAS-036)

Synthèse

Les coûts sont depuis longtemps l'un des principaux enjeux de l'analyse des systèmes militaires. La question n'est pas limitée aux seuls coûts d'acquisition mais englobe l'ensemble des coûts associés à l'exploitation et à la mise au rebut des systèmes. Des concepts tels que le coût du cycle de vie (LCC), le coût sur toute la durée de vie (WLC), le coût de possession (COO) et le coût global de possession (TOC) sont cités de plus en plus fréquemment dans les documents traitant de l'analyse des systèmes. La plupart des pays ont développé leurs propres définitions, méthodes et outils, ce qui risque de poser des problèmes lorsqu'il s'agira de travailler en commun au niveau international. Une étude a donc été lancée, sous l'égide de l'OTAN, afin d'harmoniser les aspects les plus importants du LCC. L'étude réalisée par l'équipe technique SAS-028 a porté sur trois domaines concurrents, à savoir : La structure de ventilation de coûts qui définit et constitue le cadre de l'ensemble des éléments de coût à prendre en considération, les limites de ces éléments de coût telles que définies par LCC, TOC, COO et WLC, ainsi que la mise en œuvre de ces concepts (analyses économiques et financières, optimisation, etc..) par les décideurs.

Le symposium a privilégié ces questions, ainsi que la mise en application de la gestion du cycle de vie (LCM) et la nécessité de prévoir un plan d'action à court, à moyen et à long terme, à exécuter sous la direction des autorités supérieures de l'OTAN. Les participants ont clairement identifié le besoin de disposer d'une méthode d'estimation de coûts basée sur les objectifs, afin de pouvoir relever les futurs défis dans les domaines de l'estimation et la prévision De même, il a été considéré primordial d'adopter des pratiques commerciales et non commerciales et de prendre en compte les coûts du cycle de vie global pour écourter le processus du cycle de vie. Des différences notables entre ces deux paradigmes (commercial, défense), ont été identifiées et différents modèles d'évaluation de coûts réussis ont été présentés. Ces modèles, développés soit indépendamment, soit conjointement, même s'ils sont structurés différemment, montrent des similitudes marquées du point de vue de certains générateurs de coûts bien définis. En outre, ils fournissent la preuve de l'ampleur de l'expérience et des compétences qui sont en train d'être acquises par les pays de l'OTAN. Leur présentation dans un forum unique donne aux pays membres l'occasion de présenter leurs propres pratiques et expériences, favorisant ainsi un échange d'informations entre les pays de l'OTAN et ceux du Partenariat pour la Paix. De tels échanges serviront à confirmer l'intérêt des études LCC dans le contexte de projets multinationaux.

Click inside the blue boxes or on the titles to view the corresponding section

Contents

Theme

Costs have long since become a major issue in military systems analysis. Attention is not limited to the acquisition costs alone, but encompasses all costs involved in the use and disposal of systems. Concepts such as Life Cycle Cost (LCC), Whole Life Cost (WLC), Cost of Ownership (COO) or Total Ownership Cost (TOC) are more and more frequent in any document dealing with system analysis.

Most nations have developed and use their own definitions, rnethods and tools, which may cause problerns when it cornes to working together at multinational level. This is why a study has been undertaken under the auspices of NATO to harmonise the most important aspects of LCC.

The study carried out by the technical team SAS-028 covered three concurrent areas: the cost breakdown structure that defines and organises all cost elements to be considered, the boundaries of those cost elements defined by LCC, TOC, COO and WLC and the uses of those concepts (economic or financial analysis, optimisation, etc.) by decision rnakers.

The first objective of the Symposium is to present the findings of SAS-028 to NATO and Partnership for Peace (PfP) nations. The second objective is to give nations the opportunity to present their own practices and experiences, thus fostering exchange of information among countries, and to strengthen LCC studies in multinational projects.

Thème

La question des coûts est devenue, depuis longtemps, l'un des éléments majeurs dans l'analyse des systèmes militaires. L'attention ne se porte pas seulement sur les coûts d'acquisition, mais aussi sur l'ensemble des coûts associés à l'utilisation et à l'élimination des systèmes. On voit de plus en plus souvent apparaître, dans tous les documents en anglais traitant de l'analyse des systèmes, des concepts tels que le Life Cycle Cost (LCC), le Whole Life Cost (WLC), le Cost of Ownership (COO) ou le Total Ownership Cost (TOC), auxquels correspondent à peu près, en français, les concepts de coût global de possession (CGP), de calcul des coûts sur l'ensemble de la durée de vie ou de coût du cycle de vie.

La plupart des pays ont élaboré et utilisent leurs propres définitions, méthodes et outils, ce qui peut entraîner des problèmes lorsqu'il s'agit de mener des travaux en commun au niveau international. C'est pourquoi une étude a été entreprise, sous l'égide de l'OTAN, en vue d'harmoniser les aspects essentiels du CGP.

L'étude, réalisée par l'équipe technique SAS-028, couvrait trois domaines parallèles : structure de ventilation des coûts, définissant et organisant tous les éléments de coût à prendre en compte; limites de ces éléments de coût définies par les concepts de LCC, WLC, COO et TOC; et utilisations de ces concepts (analyse économique ou financière, optimisation, etc.) par les décideurs.

L'objectif principal du Symposium sera de présenter les conclusions du SAS-028 aux pays membres de l'OTAN et aux pays membres du Partenariat pour la paix (PPP). Le second objectif sera à la fois de donner aux pays l'occasion de présenter leurs propres pratiques et leur expérience, favorisant ainsi les échanges d'informations entre eux, et de développer les études sur le CGP dans les projets multinationaux.

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LCC (Life Cycle Cost)
Life cycle costs
Life cycles
Logistics
Maintenance
Maintenance management
Military planning
Service life
TOC (Total Ownership Cost)
Value engineering
WLC (Whole Life Cost)

14. Abstract

Cost, not limited to acquisition costs but all costs involved in the use and disposal of systems, has become a major issue in military systems analysis. In order to harmonize the most important aspects of Life Cycle Cost (LCC) a study was carried out by Technical Team SAS-028 covering three concurrent aspects: the cost breakdown structure that defines and organises all cost elements to be considered, the boundaries of those cost elements defined by LCC, TOC, COO and WLC and the uses of those concepts (economic or financial analysis, optimisation, etc.) by decision makers.

Following this study, a symposium entitled "Cost Structure and Life Cycle Cost (LCC) for Military Systems" was held in Paris from 24 to 25 October 2001. Twenty-two papers, focusing on concepts such as Life Cycle Cost (LCC), Whole Life Cost (WLC), Cost of Ownership (COO) or Total Ownership Cost (TOC), were presented.

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